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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/067,947	02/08/2002	Yasuoki Tomita	219353US3	6630

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EXAMINER	
NGUYEN, NINH H	

ART UNIT	PAPER NUMBER
3745	5

DATE MAILED: 03/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/067,947	Applicant(s) TOMITA ET AL.	
	Examin r Ninh H. Nguyen	Art Unit 3745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-12 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-12 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 08 February 2002 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 2.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 7 and 12 are rejected under 35 U.S.C. 102(e) as being anticipated by Xia (6,670,046).

Xia discloses a turbine split ring (Figs. 1-3) having a gas path surface extending in the combustion gas flow direction, the gas path surface being coated with a thermal barrier coating 6, 8, wherein the thermal barrier coating is formed so as to go around from the gas path surface to at least a part of the outer peripheral face (Fig. 3; col. 2, line 11-14);

wherein a step portion is formed in at least a part of the peripheral edge portion (Fig. 3), and the thermal barrier coating is formed so that it goes around to the step portion and the end face thereof is in contact with the upper face of the step portion.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1, 2, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schaeffer et al. (5,843,586) in view of Xia.

Schaeffer discloses a turbine moving blade (Fig. 1) comprising a platform 16 having a gas path surface extending in the combustion gas flow direction, and a blade portion 12 erecting on the platform, the gas path surface of platform being coated with a thermal barrier coating (col. 3, lines 60-63), wherein a step portion is formed in at least a part of the peripheral edge portion of the platform.

However, Schaeffer does not disclose the thermal barrier coating is formed so as to go around from the gas path surface of platform to at least a part of the outer peripheral face of the platform, and the thermal barrier coating is formed so that it goes around to the step portion and the end face thereof is in contact with the upper face of the step portion as claimed.

Xia teaches a durable and cost effective thermal barrier coating system for turbine components such as, ring seal segment, transitions, combustors, vane platforms and the like (col. 2, lines 58-61); wherein the thermal barrier coating system comprises a first composite thermal barrier coating covering a portion of the component and a second deposited thermal barrier coating covering the edge portions of the component (col. 2, lines 11-14; Figs. 1-3).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made, to make the turbine moving blade of Schaeffer with the thermal boundary coating system of Xia to cover the platform and the edge portions of the platform such that the

thermal barrier coating goes around from the gas path surface of platform to at least a part of the outer peripheral face of the platform to the step portion for the purpose of providing a durable and cost effective thermal barrier coating system for the platform as taught by Xia.

5. Claims 5, 6, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nichols et al. (6,126,400) in view of Xia.

Nichols discloses a turbine stationary blade (Fig. 2) comprising a pair of shrouds 14, 32 each having a gas path surface extending in the combustion gas flow direction, and a blade portion 26 held between the shrouds, at least either one of the shrouds being coated with a thermal barrier coating (col. 3, lines 32-35), wherein a step portion (Fig. 2, near fillet 30) is formed in at least a part of the peripheral edge portion of the shroud.

However, Nichols does not disclose the thermal barrier coating is formed so as to go around from the gas path surface of shroud to at least a part of the outer peripheral face of the shroud, and the thermal barrier coating is formed so that it goes around to the step portion and the end face thereof is in contact with the upper face of the step portion as claimed.

Xia teaches a durable and cost effective thermal barrier coating system for turbine components such as, ring seal segment, transitions, combustors, vane platforms and the like (col. 2, lines 58-61); wherein the thermal barrier coating system comprises a first composite thermal barrier coating covering a portion of the component and a second deposited thermal barrier coating covering the edge portions of the component (col. 2, lines 11-14; Figs. 1-3).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made, to make the turbine stationary blade of Nichols with the thermal boundary coating system of Xia to cover the surface exposed to the hot gas path and the edge portion of the

at least one shroud so that the thermal barrier coating goes around from the gas path surface of shroud to at least a part of the outer peripheral face of the shroud to the step portion for the purpose of providing a durable and cost effective thermal barrier coating system for the shroud as taught by Xia.

6. Claims 3, 4, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ai (6,152,694) in view of Xia.

Ai discloses a turbine moving blade (Fig. 6a) comprising a platform, a blade portion erecting on the platform, and a shroud 11 provided at the tip end of the blade portion, wherein a step portion is formed in at least a part of the peripheral edge portion of the shroud.

However, Ai does not disclose a gas path surface extending in the combustion gas flow direction of the shroud being coated with a thermal barrier coating, wherein the thermal barrier coating is formed so as to go around from the gas path surface of shroud to at least a part of the outer peripheral face of the shroud, and the thermal barrier coating is formed so that it goes around to the step portion and the end face thereof is in contact with the upper face of the step portion as claimed.

Xia teaches the need for coating components of a gas turbine with thermal barrier coatings (col. 1, lines 13-15), and a durable and cost effective thermal barrier coating system for turbine components such as, ring seal segment, transitions, combustors, vane platforms and the like (col. 2, lines 58-61); wherein the thermal barrier coating system comprises a first composite thermal barrier coating covering a portion of the component and a second deposited thermal barrier coating covering the edge portions of the component (col. 2, lines 11-14; Figs. 1-3).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made, to make the turbine moving blade of Ai with a thermal barrier coating system of Xia , to cover the surface exposed to the hot gas path and the edge portions of the at least one shroud so that the thermal barrier coating goes around from the gas path surface of shroud to at least a part of the outer peripheral face of the shroud to the step portion for the purpose of protecting the heat exposing surface of the shroud and providing a durable and cost effective thermal barrier coating system for the shroud as taught by Xia.

Prior Art

The prior art made of record but not relied upon is considered pertinent to applicant's disclosure and consists of 2 patents.

Thompson (5,423,659) and Hughes et al. (5,439,348) are cited to show coated turbine shrouds.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Ninh Nguyen whose telephone number is (703) 305-0061. The examiner can be normally reached on Monday-Friday from 8:00 A.M. to 5:30 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Look, can be reached at (703) 308-1044. The fax number for this group is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0861.

NINH H. NGUYEN
PRIMARY EXAMINER

Nhn
February 19, 2004